As we noted, in this section we will provide highlights of research papers or issues. For the current highlight, we have showcased the founding father of conditioned taste aversion learning, Dr. John Garcia. In this highlight, Dr. Garcia reconstructs his early foray into aversion learning and describes the implications of his and his colleagues' work for general learning theory. Besides being the originator of this broad area of science, Dr. Garcia has been and remains a broad and active scholar. The presentation (and understanding) of his classic work in the context of other scholars nicely illustrates this. We welcome any comments on Dr. Garcia's summary.

Conditioned Taste Aversions: John Garcia

I was born in 1917, and I grew up in the horse and wagon days of the 1920s on the rural California coast. I was in grammar school before I rode in an automobile or saw an airplane fly overhead. Working daily with domestic animals, hunting, fishing and staring at wildlife with field glasses on my days off made me critical of printed descriptions of animal behavior. I spent decades as a carpenter and a mechanic acquiring a solid cause and effect analytical point of view applicable to the laboratory.

I was pleased to be cited as the originator of conditioned taste aversions (CTA) in 1955 (Garcia et al., 1955). However, I must invoke that old adage, "I could see far ahead, because I was standing on the shoulders of giants." In my paper, Tiltinq at the Papermills of Academe (Garcia, 1981) I paid my dues to John Locke's historic shoulders for his explicit neuroscientific analysis of CTA in 1690. Naturally, Darwin knew about CTAs. Discussing the behavior of the gaudy caterpillar displaying its tender body to passing birds, Darwin credits Alfred Wallace with the notion that the caterpillar was advertising its toxicity. Poison is a popular defense in nature, employed by plants as well as animals (Garcia and

Hankins, 1977). We also acknowledged the recent historic shoulders of Curt Richter (1942) who, in turn, cited the precedence of Claude Bernard (milieu interne) and Walter Cannon (wisdom of the body). Both of them studied the physiological reactions to stress. Curt Richter added coping responses to stress in his classic Harvey Lecture series (Garcia et al., 1974). What did I add? My colleagues and I researched a new insidious threat to life on earth circa 1951. At the end of World War II, atomic bombs exploded over Japan, scattering radioactive debris far and wide. We found that the most sensitive effect of exposure to ionizing radiation was CTA (Garcia et al., 1967).

For a brief period as a young man, I was employed as a graphic artist, so I was pleased to see on the home page of the Riley and Freeman database my diagram of a rat faced with two signals, click and sweet, followed by two punishments, foot pain and gut nausea. Stimulated with click-pain, rats quickly learn to fear the clicking spout. But faced with sweet-pain rats will not acquire a general CTA for sweet in other places. Conversely, suffering a single pairing of sweet-nausea, rats will acquire a general distaste for sweet, even when an hour or more intervenes between the paired experiences.

These effects limited the "behavioral laws" of contiguity and effect. In contrast, I recall Skinner's infamous figure showing three different animals, I believe they were a rat, pigeon and monkey, in a Skinner box set to deliver food pellets on a fixed interval schedule, all generating identical cumulative response records.

Apparently, it did not occur to Skinner that a method which could not distinguish among the three species was of little value in the analysis of behavior. Imagine what would have happened if Skinner had added taste-nausea to the behavioral sequence, or added a reptile or a human to his tested subjects. A snake tracking prey to a tree will lie at the base of the tree, waiting all day for its prey to come back down. And a human will work for a month before receiving a paycheck.

Of course, I have a selfish interest in citing historic sources. It indicates I spent as much time in the library as I did in the laboratory. If I do not maintain this scholarly tradition, my successors would be less likely to cite me when I am gone. John Garcia (February 28th, 2005).

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